Yuqun Wu

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Education

University of Illinois at Urbana-Champaign Champaign, USA
Doctor of Philosophy in Computer Science *Aug 2023 - Present*
- Advisor: *Prof. Derek Hoiem*

Master of Science in Computer Science (thesis) *Aug 2022 - May 2023*
- Advisor: *Prof. Derek Hoiem*, *Prof. Shenlong Wang*

Bachelor of Science in Computer Science & Statistics *Jan 2020 - Dec 2021*
- Highest Honors at graduation, Dean's list for all years, GPA: 4.0/4.0

Sun Yat-sen University Guangzhou, China
Bachelor of Science in Mathematics *Sep 2016 - Dec 2019*

Research Experience

University of Illinois at Urbana-Champaign Champaign, USA

Unified indoor 3D scene understanding *Aug 2023 - Present*
Advisor: Prof. Derek Hoiem, Prof. Shenlong Wang
- Project targets at building an unified indoor 3D scene that enables rendering and 3D Q&A
- Investigate different representation and the performance and potential of heuristic methods

Improving Neural Radiance Fields with Patch-based Monocular Guidance *Jan 2023 - May 2023*
Advisor: Prof. Derek Hoiem, Prof. Shenlong Wang - ***Under Review***
- Project aimed to create 3D models that provide accurate geometry and view synthesis, partially closing the large geometric performance gap between NeRF and traditional MVS methods
- Proposed appearance regularization of normalized cross-correlation (NCC) and structural similarity (SSIM) between randomly sampled novel and training view to improve general performance

QFF: Quantized Fourier Features for Neural Field Representations *Aug 2022 - Nov 2022*
Advisor: Prof. Derek Hoiem, Prof. Shenlong Wang - ***Under Review***
- Project presented Quantized Fourier Features (QFF), which encoded features in bins of Fourier features, and resulted in smaller model size, faster training, and better quality outputs for various applications of neural representation
- Assist in blending QFF into different network setups and running experiments

Sparse SPN: Depth Completion from Sparse Keypoints *Sep 2021 - Nov 2022*
Advisor: Prof. Derek Hoiem - ***Under Review***
- Project draw attention to single view depth completion taking point cloud from SFM as input
- Proposed a novel method that outperforms existing depth completion pipelines given sparse keypoint depth, and reconstructed complete point clouds given SfM setup

GRIT: General Robust Image Task Benchmark *Jun 2021 - Aug 2021*
Advisor: Prof. Derek Hoiem
- Rendered surface normal of object-centric and scene-centric datasets, and split them into training, validation, and testing sets
- Trained a baseline network with training sets, and compare it with several other pretrained state-of-the-art normal estimation networks with testing sets
- Challenge Organizer of the 2nd workshop on Open World Vision of CVPR 2022

University of California San Diego Remote

Lighting completion from sparse lighting samples *Jun 2022 - Sep 2022*
Advisor: Prof. Manmohan Chandraker
- Project aims at recovering per-pixel spatially-varying lighting maps taking single color image and sparse lighting samples
- Investigated 2D lighting completion methods with differentiable rendering and compare to pure RGB-based estimation networks

Activities

Teaching Assistant Champaign, USA
University of Illinois at Urbana-Champaign *Aug 2022 - May 2023*

- Course: *CS 445 Computational Photography*, *CS 441 Applied Machine Learning*

Summer Research Experience for Undergraduates (REU) Champaign, USA
University of Illinois at Urbana-Champaign *May 2021 - Aug 2021*

- Attended weekly seminars covering research skills, presentation skills

Skills

- **Programming Languages**: Python, C/C++, JavaScript, R
- **Other Tools**: Git, Pytorch, Latex